Explanatory note

Contents

Urban design idea

The urban development of the VU (Vilnius University) complex began in the 20th century with the construction of buildings for scientific purposes.

The complex has evolved continuously and continues to evolve today. In the future, it will also continue to evolve through the construction of new buildings and the improvement of the infrastructure. The development of the VU campus includes both the construction of new buildings and the reconstruction of old ones.

In addition to the VU complex, there are also VGTU complexes, a library and innovation centres. All these form a common system of buildings and spaces.

The project has taken into account the existing urban structure, adapting to it. The urban structure has not been radically altered, but the existing compositional axes, main accesses and entrances have been maintained.

The phasing of construction has been taken into account in the planning of the buildings of the complex, as the number of buildings is large and it would not be anonymous and difficult to complete the entire scope at one time.

Efforts have been made to ensure that the complex is in harmony with its surroundings, and that it is respectful of the historic urban development of the urban area and the site, as well as of the landscape values of the landscape.

When reconstructing existing volumes and designing new volumes, efforts shall be made to preserve the established development methods, lines, height and spatial structure of the complex.

New volumes of the complex shall be integrated into the existing composition of the buildings, complementing, or at least not overshadowing it.

The existing spaces between the buildings are analysed in the design of the complex. Most of them are not open and are worn out. The existing spaces are complemented with new volumes and functions and a new spatial quality.

New volumes, driveways and accesses are formed in non-urbanised areas to the south. Accessibility by various means of transport: cars, bicycles, public transport.

Architectural idea

The architectural idea of the Vilnius University (VU) campus was to create a modern, functional and integrated space with buildings that would not only meet the needs of the university, but also relate harmoniously to the urban environment.

The newly formed volumes complement the existing building complex. The aim is to create a complex with coherence and integrity.

The new volumes and spaces shall be designed in accordance with the spatial planning documents.

Due to the large size of the competition programme, the volumes are to be subdivided in order to fit the scale of the existing development. The aim is also to provide light towards the nature on the south side.

The main idea is that the new volumes and development should not clash with the existing development, but integrate and complement it.

The site plan of the area is also not radically changed. Existing accesses and driveways and compositional axes are maintained.

The volumes shall be reconstructed

The reconstruction of the existing building volumes shall involve changes to the façades. The three-layer reinforced concrete slabs are removed and replaced by a new ventilated façade with ceramic finish.

The façades are designed to have a contextual relationship with the surrounding development and the surrounding nature, and to pay respect to the past.

The expression of the façades retains the former character of the buildings - a pattern of horizontal lines. The chosen principle of a ceramic finish, which consists of repetitive elements, maintains the former principle of the facades - a geometric pattern formed by formwork matrices.

The new partitioning of the glass part of the façades responds to today's needs.

Connecting shell

The new connecting volume is visually divided into three blocks, which accommodate the administration, the classrooms and the other spaces foreseen in the programme.

The shell is divided into three parts through glass atriums to provide a visual corridor towards the south side of the building.

The composition of the volumes is such that some of them are hidden behind the volumes of the existing faculties, so that the volumes do not appear large from the main axis of access (north side).

The partitioning of the volumes is also aimed at transparency.

Each of the ground volumes has a small courtyard on the upper floors to provide light for the working spaces.

The courtyards between the first two existing faculties provide a sunken, large auditorium.

The auditorium in the courtyard between the torchieres, cleanses and gives meaning to the existing unused space. In the other courtyard, the FIDI sign-dragon sculpture is placed.

Courtyard with admission to the auditorium

Atriums are formed between the subdivisions of the blocks to accommodate vertical connections - elevators and staircases. They also serve as entrances between the two sides of the wings, south and north. Vertical connections (lifts and staircases) link the car park to the upper floors.

Faculty of Mathematics and Computer Science

The design is a homogeneous volume with one main covered atrium and several smaller uncovered courtyards.

The size of the designed volume does not stand out from the surrounding development due to the volume separation and other architectural measures.

The main entrance is accentuated by a raised cantilevered section and a massive amphitheatrical staircase.

The main feature of the building is the atrium with an amphitheatrical staircase that leads from the exterior to the interior.

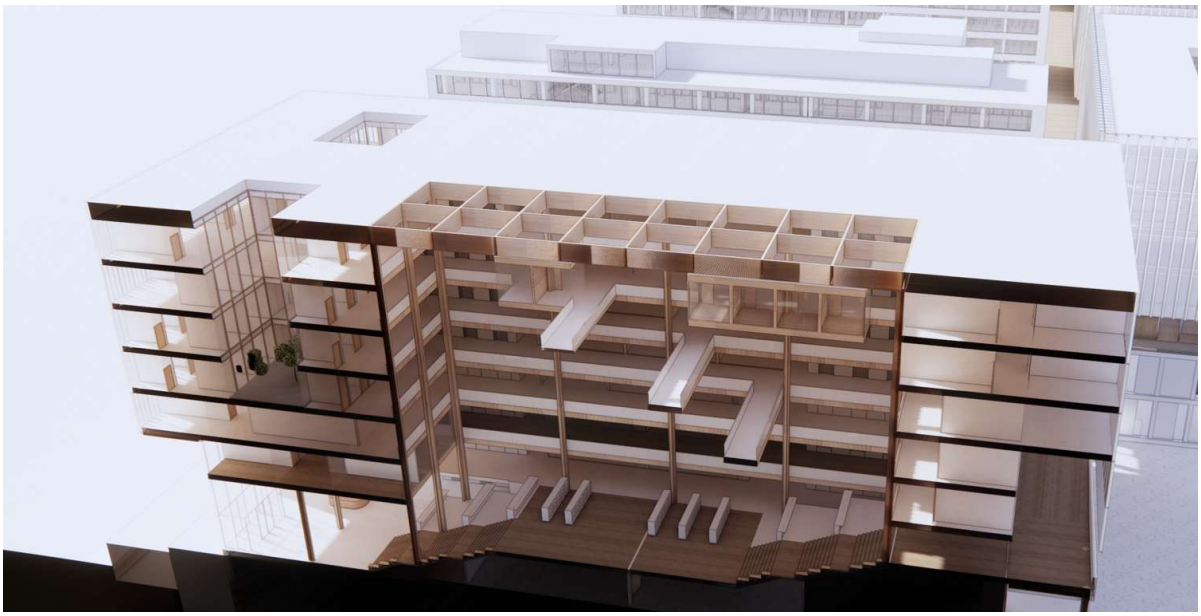
The atrium, next to the staircase, houses an open-plan library.

The atrium has bridges on different levels to access different sides of the building.

The interior emphasises wood construction and wood finishes.

The atrium is covered with wooden beams on which the façade system is installed.

Ancillary facilities are provided in the underground car storage.



Atrium diagram

Phasing

An important aspect of the complex is the phasing of construction. As the complex is large and complex, it is economically and practically difficult to implement it all at once.

The first phase involves the demolition of the connecting building and its replacement by an underground car storage facility with a new connecting volume. This would also include one of the above-ground volumes of the connecting wing. The first phase aims at building new connecting links between the existing faculties and the new volumes planned for the future.

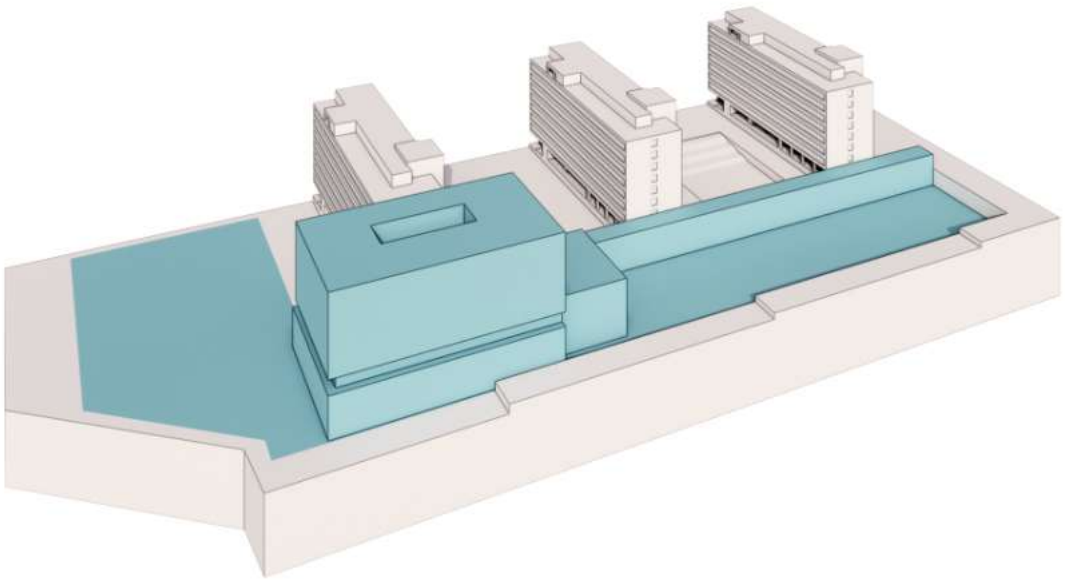


Diagram of the first phase

The second phase involves the construction of another ground volume of the connecting wing.

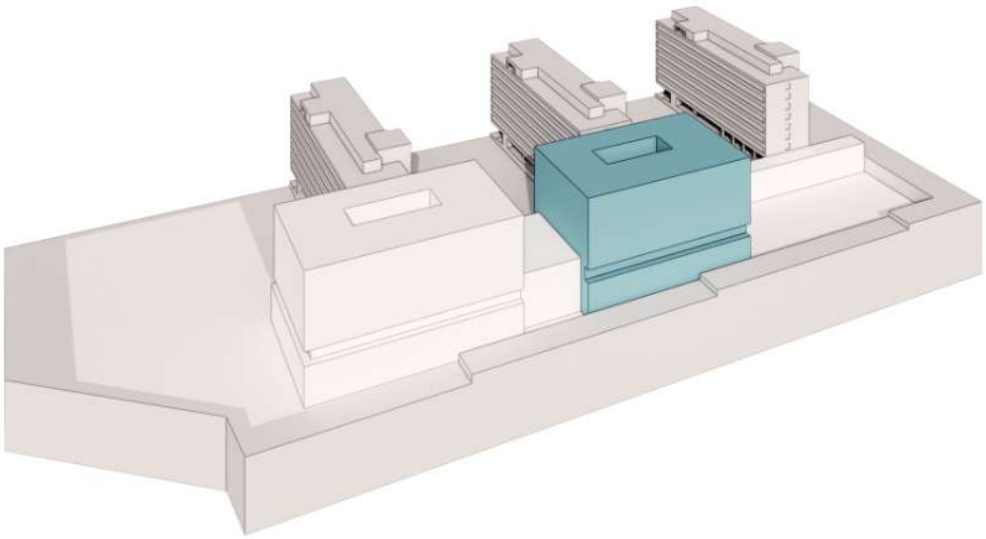


Diagram of the second phase

The third phase is the construction of the last ground volume of the connecting wing.

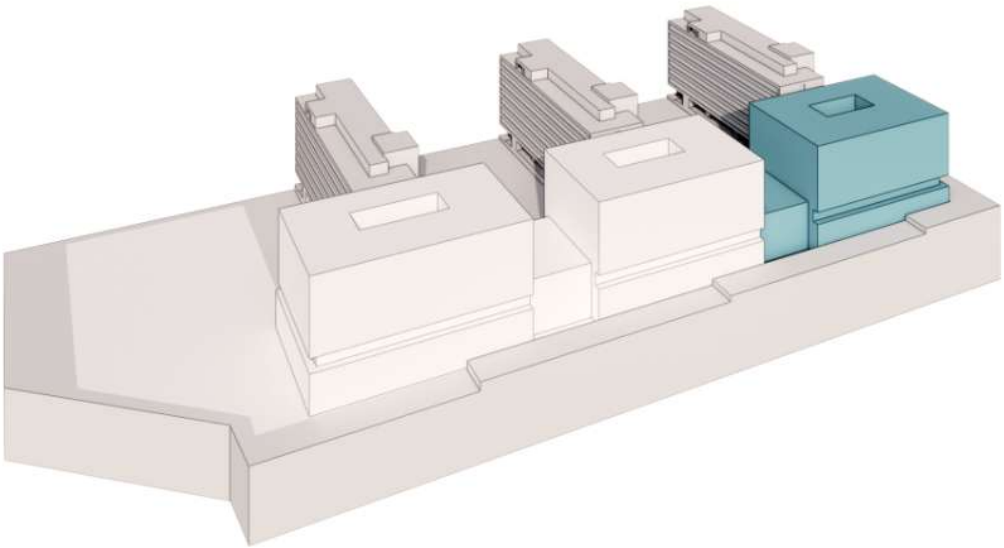
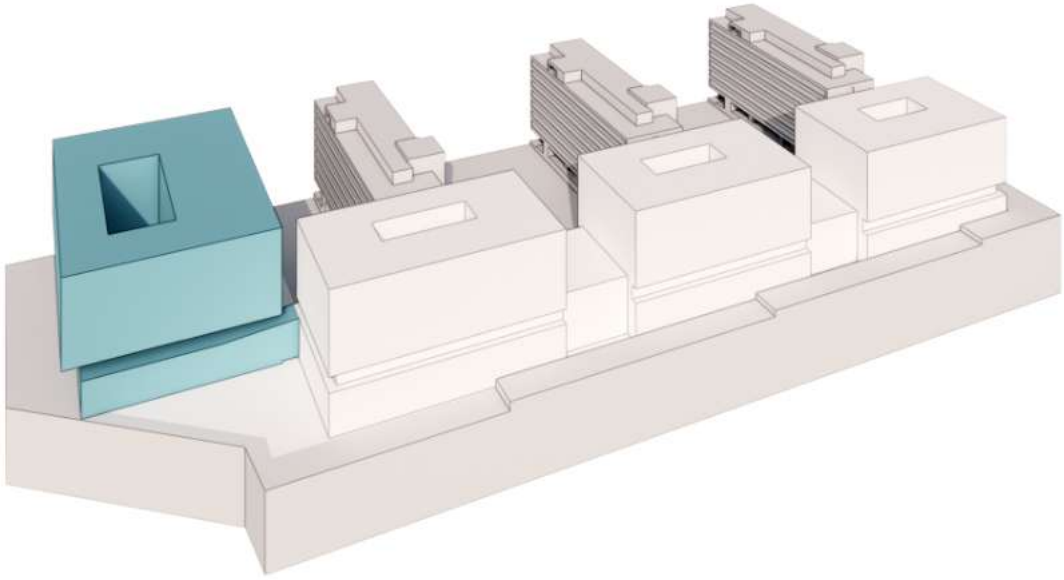


Diagram of the third phase

The fourth phase is the new Faculty of Mathematics and Informatics at Vilnius University.



Flowchart for Phase 4

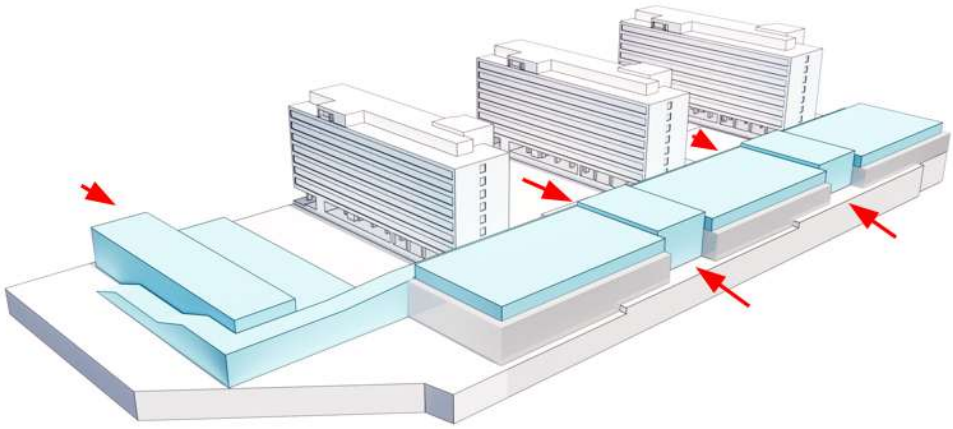
Functional planning of the building

The design of the complex examined the relationship between the existing buildings and the relationship between the new volumes and spaces to be added to them.

The volume connecting the old blocks (the connecting palace) is being demolished and an underground car park is being built underneath it.

The decision to demolish the connecting building was taken after analysing the existing connections and the possibility of integrating them into the new buildings.

A new connecting volume is being built on top of the underground car storage building, which integrates the new lecture rooms and facilities above it, the existing faculties, the new VU Faculty of Mathematics and Informatics, together with the car storage building below.



Entrances to the connecting housing

The underground car storage is accessed from Saulėtekio al.

Service vehicles also access the underground car park from Saulėtekio Avenue.

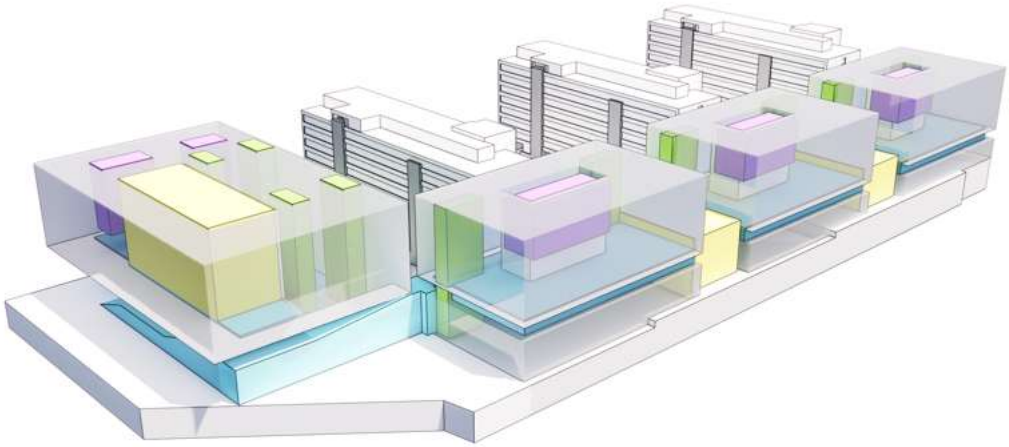
The new connecting volume is divided into three blocks, which accommodate the administration, classrooms and other facilities foreseen in the tender programme.

Transparent glass atriums are formed between the subdivisions of the blocks to accommodate vertical connections, elevators and staircases. They also serve as entrances between the blocks. Vertical connections link the car park to the upper floors.

The atriums are designed to be transparent, which accentuates the light towards the forest.

The connecting volume also gives access to terraces and balconies.

The reconstructed faculty volumes retain the same basic functions, but propose more common spaces, open offices and the removal of redundant walls.



Vertical hull connections

In the new Faculty of Mathematics and Informatics at VU, the atrium with an amphitheatrical staircase becomes the focus and distribution area of the pagrides. This space also houses the faculty's open library.

From the atrium, student flows are distributed by stairs and lifts to other floors. We offer two panoramic lifts and four more ordinary lifts.

The atrium staircase extends outside through a transparent glass window. Outside, the stairs lead to a terrace and to the other blocks.

Building materiality

Structures to be reconstructed

The structures to be reconstructed are assessed and investigated before the project is designed.

In principle, their structure and materiality (columns, cores, staircases) are kept as they are.

Only the façades and the internal layout are modified.

On the façades, a new façade subdivision and a new material for the blind parts are proposed. A ventilated façade system is proposed for the glazed parts. Ceramic products are proposed for the finishes. This choice of materials is due to the proximity of buildings with similar materials in the vicinity. The façade system also retains the former façade principle of a geometric pattern formed by formwork matrices.

The connecting volume and the Faculty of Mathematics and Computer Science

The new volumes are proposed to use natural, real materials. Both in the facades and in the structures.

For the façade of the connecting volume three materials are used: wood, aluminium and glass. These materials are repeated in the new VU Faculty of Mathematics and Informatics.

The ground floor and atriums use timber structures and timber finishes.

On the other floors, glass and aluminium.

Supporting structures such as columns, retaining walls, cores, staircases are left in their 'natural' state and are not finished with any additional materials.

Solutions for building structures

For the new volumes to be designed, a conventional structural scheme is proposed for this type of building: reinforced concrete load-bearing columns and reinforced concrete slabs (prefabricated or cast-in-place). The core and stairway elements are planned to be prefabricated, reinforced concrete, manufactured in the factory.

The optimum column pitch shall be selected so that the columns start in the underground car storage and test to the upper floors. The optimal column pitch shall be selected according to parking, size of classrooms and other parameters. The perimeter walls of the underground car storage facility shall be monolithic.

For completely new volumes, in addition to reinforced concrete columns, it is proposed to introduce timber structures in the interior, which would also be used as interior elements. The use of wood in the structures would respond to sustainability trends.

The timber structures would be of glued laminated timber, complying with fire regulations.

Prior to the design of the volumes to be reconstructed, it is necessary to carry out an assessment of the condition of the existing structures, assessing the compliance of the existing structures and the newly installed structures with the essential requirements of the building.

In large lecture halls and large auditoriums, load-bearing columns shall only be provided around the perimeter to allow for column-free spaces. For the roofing of auditoriums, trusses shall be designed to be supported by columns located on the perimeter of the room.

Following an assessment of the condition of the existing structures, the buildings to be reconstructed should be repaired, repaired or reinforced before further work is carried out.

The façades of the newly designed volumes shall be elemental and suspended.

For reconstructed volumes, facades shall be replaced by demolition and insulated with an efficient insulation material. Façade finishes shall be provided by means of ventilation façade systems with ceramic finishes.

Valuable elements of the facades to be dismantled shall be used for the decoration of the new interiors, while unvaluable materials shall be recycled and reused as far as possible.

Atriums with glass roofs are designed in the buildings to provide the necessary light and create cosy spaces.

The glass roofs shall be made of load-bearing beams and the façade systems mounted on them.

Traffic and pedestrian flow solutions

On the north side, the existing infrastructure is retained: car park, driveways and accesses.

On the north side, new entrances through atriums are proposed in addition between the old faculty volumes.

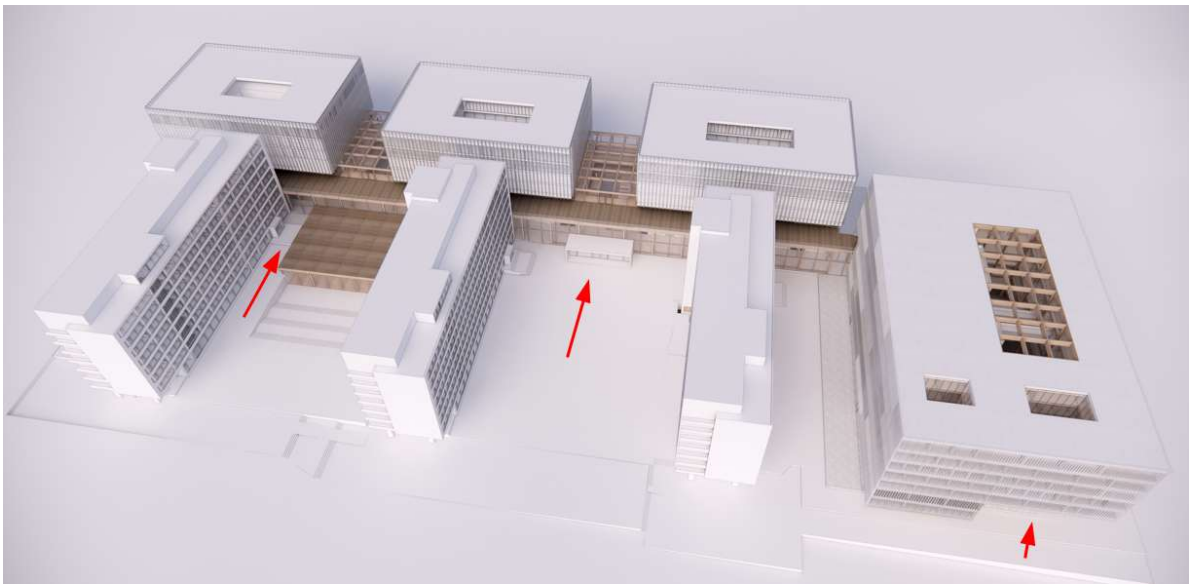


Diagram No 1

The existing entrances to the faculties are also retained.

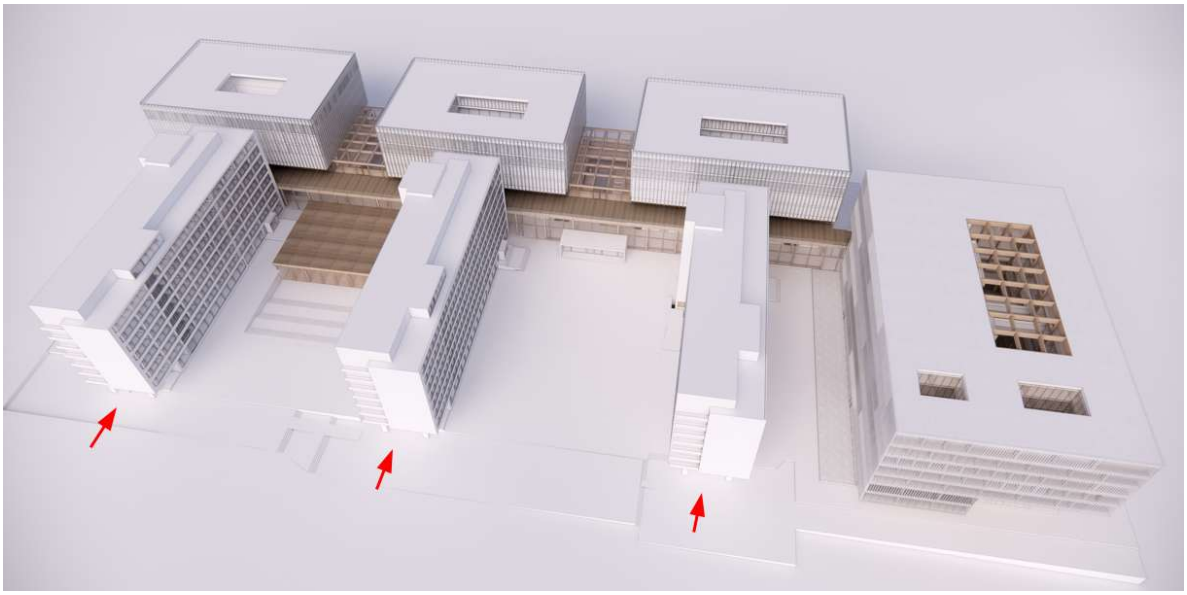


Diagram No 2

The atriums on the south side also provide access to the connecting copse. From the south side, a new access and egress to the designed underground car storage is formed. The accesses are formed via ramps.

Sustainability

New volumes shall be designed to an A++ energy performance class.

Existing buildings shall be retrofitted to comply with energy performance class A.

In the case of renovation and energy performance requirements, an initial energy performance assessment and modelling of the building is required prior to design in order to achieve optimum solutions.

The values of the resistances will be estimated at a later design stage, based on energy calculations.

The complex is being designed to comply with the points required for BREEAM certification.

The architectural, engineering and transport organisation solutions have been planned with a view to achieving the highest BREEAM rating.

Renewable energy solutions are designed into the buildings: solar power plants, geothermal heating.

In renovated and new buildings, blinds are designed on the facades for solar control, which will work automatically, on demand, to regulate the amount of sunlight entering the premises, thus optimising cooling and heating in winter.

In line with the ideas and proposals of the new European Bauhaus, wood is used in the interiors, facades and structures.

In other constructions, it is also proposed to retain 'natural' finishes such as concrete.

Newly designed structures are proposed to have the smallest possible CO2 footprint.

It is proposed to reuse as many materials and products as possible in the reconstruction work. One example is that the façade finishes of the buildings under reconstruction, which are also protected, are proposed to be stripped and used in the interior design of the auditoriums and halls.

The interior inventory can be used to reuse wall tiles, furniture and technical equipment.

Low-maintenance, perennial plants are to be used in the landscaping solutions. Plants should be indigenous, creating an ecosystem characteristic of the site.

Indicators

	Part of the complex	Total ground area (sq m)	Total underground area (sq m)
1.	Renovation of faculty buildings in the Science Complex	26000	-
2.	The Connecting Chambers of the Science Complex are being redeveloped	29560	14000
3.	New building for the Faculty of Mathematics and Informatics at Vilnius University	17100	8200
	Total sqm	72660	22200